Nonlinear Speculative Dynamics and Currency Crisis in Lebanon

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The detection of chaos and nonlinearities in economic and financial time series has a relatively short history in economics and finance. This growing field of research is motivated by the inadequacy of stochastic linear models of economic and financial variables such as GNP, exchange rates and stock prices to explain the stylized facts of market dynamics. The presence of nonlinear structures in market dynamics can reveal the importance of speculative activities and the prevalence of endogenous fluctuations in the economy and financial markets. When market dynamics exhibit limit cycles, aperiodic cycles or strange attractors then speculators can forecast the future paths of prices creating herd behavior dynamic and bandwagon effects that drive the market dynamics. These effects generate deterministic structures and signatures in the data. This paper presents a case study of the Lebanese currency crisis during the 1980s. The data is daily for the years 1985-1992. The tests applied are BDS, correlation dimension, Tsay test and the Mcleod-Li test. All the tests corroborate a nonlinear generating mechanism for currency values. The correlation dimension shows a finite dimension for shuffled data. The results show strong evidence of nonlinear structure, which lends support to the hypothesis that the currency crisis in Lebanon was driven by deterministic speculative activity.